

**Top Secret**



25X1



**P**HOOTOGRAPHIC  
**I**NTERPRETATION  
**R**EPORT

NATIONAL PHOTOGRAPHIC  
INTERPRETATION CENTER

# **CONFIGURATION OF ANTENNA ELEMENTS IN HARDENED BI-GRID ANTENNA AT KOSTROMA LAUNCH CONTROL FACILITY II, USSR (S)**

**Top Secret**

25X1

AUGUST 1977

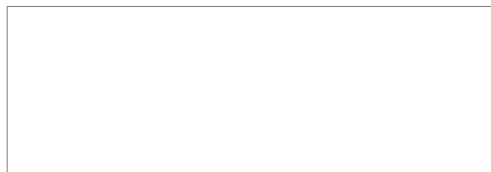
Copy 133<sup>25X1</sup>

PIR-016/77



**Warning Notice**  
**Sensitive Intelligence Sources and Methods Involved**  
**(WNINTEL)**

**NATIONAL SECURITY INFORMATION**  
**Unauthorized Disclosure Subject to Criminal Sanctions**



25X1

**DISSEMINATION CONTROL ABBREVIATIONS**

NOFORN-	Not Releasable to Foreign Nationals
NOCONTRACT-	Not Releasable to Contractors or Contractor/Consultants
PROPIN-	Caution-Proprietary Information Involved
USIBONLY-	USIB Departments Only
ORCON-	Dissemination and Extraction of Information Controlled by Originator
REL . . . -	This Information has been Authorized for Release to . . .

Top Secret RUFF

25X1

# **CONFIGURATION OF ANTENNA ELEMENTS IN HARDENED BI-GRID ANTENNA AT KOSTROMA LAUNCH CONTROL FACILITY II, USSR (S)**

1. (TSR) Antenna elements of a hardened Bi-Grid antenna were observed in detail for the first time [ ] of Kostroma Launch Control Facility II [ ] this imagery provides the best look to date at the antenna elements under construction in the lower level of the 32-element hardened Bi-Grid antenna (Figure 1). Figure 2 is a line drawing which shows the projected configuration of all the antenna elements at this launch control facility (LCF). These elements, which are in parallel trenches, consist of a series of [ ] dark cables looped at each end [ ] The loop patterns indicate that the cables are arranged in sets, each consisting of four cables. In addition, a thick feed cable with several junction boxes along its length was identified on part of the east/west spine of the hardened Bi-Grid antenna. The feed cable connects adjoining sets of antenna elements to each other and to a phasing point at the center of the antenna. Probable element-supporting pads were also discernible in the parallel trenches.

25X1

25X1  
25X1

2. (TSR) The hardened Bi-Grid antenna at Kostroma LCF II was first seen under construction [ ] Various stages of antenna element construction were observed in each of the four quadrants of the antenna. Beginning in the southeastern quadrant of the antenna (Figure 1) and moving counterclockwise, the early to late stages of construction are discernible.

25X1

3. (TSR) [ ] 32 hardened Bi-Grid antennas have been deployed at SS-17, -18, and -19 ICBM LCFs.

25X1

## **REFERENCE**

25X1

## **REQUIREMENT**

Project 130000ND

25X1

25X1

**Page Denied**

Next 1 Page(s) In Document Denied

## List of Conversion Factors by Classification

### UNITS OF LENGTH

<i>IF YOU HAVE</i>	<i>MULTIPLY BY</i>	<i>TO OBTAIN</i>
MILLIMETERS	0.0394	INCHES
CENTIMETERS	0.3937	INCHES
INCHES	25.4000	MILLIMETERS
INCHES	2.5400	CENTIMETERS
FEET	0.3048	METERS
FEET	0.0003	KILOMETERS
YARDS	0.9144	METERS
METERS	3.2808	FEET
METERS	0.0005	MILES(NAUTICAL)
METERS	1.0936	YARDS
KILOMETERS	3280.8400	FEET
KILOMETERS	0.6214	MILES(STATUTE)
KILOMETERS	0.5400	MILES(NAUTICAL)
MILES(STATUTE)	1.6093	KILOMETERS
MILES(NAUTICAL)	6076.1154	FEET
MILES(NAUTICAL)	1.8520	KILOMETERS
MILES(NAUTICAL)	1852.0000	METERS

### UNITS OF MASS

<i>IF YOU HAVE</i>	<i>MULTIPLY BY</i>	<i>TO OBTAIN</i>
KILOGRAMS	2.2046	POUNDS(AVOIR.)
POUNDS(AVOIR.)	0.4536	KILOGRAMS
SHORT TONS	0.9072	METRIC TONS
METRIC TONS	1.1023	SHORT TONS
METRIC TONS	0.9842	LONG TONS
LONG TONS	1.0160	METRIC TONS

### UNITS OF VOLUME

<i>IF YOU HAVE</i>	<i>MULTIPLY BY</i>	<i>TO OBTAIN</i>
LITERS	0.2642	GALLONS
LITERS	0.0063	BARRELS(POL)
LITERS	0.0010	CUBIC METERS
GALLONS	3.7854	LITERS
GALLONS	0.1337	CUBIC FEET
GALLONS	0.0238	BARRELS(POL)
GALLONS	0.0038	CUBIC METERS
BUSHELS	0.0352	CUBIC METERS
CUBIC FEET	7.4805	GALLONS
CUBIC FEET	0.1781	BARRELS(POL)
CUBIC FEET	0.0283	CUBIC METERS
CUBIC YARDS	0.7646	CUBIC METERS
BARRELS(POL)	158.9873	LITERS
BARRELS(POL)	42.0000	GALLONS
BARRELS(POL)	5.6146	CUBIC FEET
BARRELS(POL)	0.1590	CUBIC METERS
CUBIC METERS	1000.0000	LITERS
CUBIC METERS	264.1721	GALLONS
CUBIC METERS	35.3147	CUBIC FEET
CUBIC METERS	28.3776	BUSHELS
CUBIC METERS	6.2898	BARRELS(POL)
CUBIC METERS	1.3080	CUBIC YARDS

### UNITS OF AREA

<i>IF YOU HAVE</i>	<i>MULTIPLY BY</i>	<i>TO OBTAIN</i>
SQUARE CENTIMETERS	0.1550	SQUARE INCHES
SQUARE INCHES	6.4516	SQUARE CENTIMETERS
SQUARE FEET	0.0929	SQUARE METERS
SQUARE YARDS	0.8361	SQUARE METERS
SQUARE METERS	10.7639	SQUARE FEET
SQUARE METERS	1.1960	SQUARE YARDS
SQUARE METERS	1.0000	CENTARES
SQUARE METERS	0.0002	ACRES
SQUARE METERS	0.0001	HECTARES
ACRES	4046.8564	SQUARE METERS
ACRES	0.4047	HECTARES
HECTARES	10000.0000	SQUARE METERS
HECTARES	2.4711	ACRES

**Top Secret**



**Top Secret**